

## REMARKS

As recited in Claim 27, the presently-pending invention is a toner comprising: a binder resin and a particulate wax, wherein the toner has a volume-average particle diameter of from 3 to 12  $\mu\text{m}$ , and a half value width of a number-average particle diameter of particulate wax contained therein, when a cross section of the toner is observed, of 0.06  $\mu\text{m}$  or less, and wherein a distribution of particulate wax having an average particle diameter of 0.01  $\mu\text{m}$  or more throughout the toner satisfies the following equation:

$$(A/B)/(C/D) \leq 0.1$$

wherein A is total area of particulate wax contained in an outermost layer of the toner to a depth of 0.1  $\mu\text{m}$ ; B is total area of said outermost layer of the toner; C is total area of particulate wax contained in a remainder of the toner (at a depth of greater than 0.1  $\mu\text{m}$  from the surface of the toner); and D is total area of said remainder of the toner, wherein all areas are measured as observed in a cross section of said toner through a center point of said toner.

In effect, the toner is substantially free of wax particles at its outermost part, specifically in the area of the depth of 0.1  $\mu\text{m}$  from the surface of the toner, as described in the specification at page 47, line 3, through page 48, line 7, and Fig. 4.

The rejections of Claims 27-30, 32, 34 and 40 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. 2002/0028402 A1 (Matsuoka et al); and under 35 U.S.C. § 103(a), of Claim 37 as unpatentable over Matsuoka et al combined with U.S. 5,213,932 (Shimazaki); of Claim 38 as unpatentable over Matsuoka et al combined with JP 59-165069 (JP '069); and of Claim 42 as unpatentable over Matsuoka et al combined with U.S. 5,547,802 (Kawase et al), are all respectfully traversed.

Matsuoka et al disclose a toner containing a releasing agent, which is preferably a wax, and which has a content existing at the surface of the toner particles of 0 to 30% by

weight, preferably from 1% to 10% by weight ([0058]). Matsuoka et al define the surface of the toner particles to mean a layer extending from the top to a depth of 0.1  $\mu\text{m}$  ([0059]). The Examiner particularly relies on the exemplified yellow toner in Table 2, wherein the amount of releasing agent on the surface of the toner particles is 4.2% by weight and the releasing agent dispersion diameter is 0.8  $\mu\text{m}$ . The Examiner finds that this exemplified yellow toner inherently meets the terms of the present claims.

Shimazaki is relied on for its disclosure of a magenta colorant. JP '069 is relied on for its disclosure of a magenta colorant. Kawase et al is relied on for a disclosure of ratio of volume mean particle diameter to number average particle diameter.

The Examiner concedes that Matsuoka et al does not disclose the presently-recited “half value width” limitation, i.e., a half value width of a number-average particle diameter of particulate wax contained therein, when a cross section of the toner is observed, of 0.06  $\mu\text{m}$  or less, but presumes that Matsuoka et al’s toner meets this limitation. Applicants respectfully submit that the “half value width” of Matsuoka et al is much larger than 0.06  $\mu\text{m}$ , based on the following reasons:

i) Fig. 2 in Matsuoka et al shows a distribution of the dispersion diameter ( $d_1$ ) of the releasing agent particles that is relatively wide.

ii) Matsuoka et al discloses “... the releasing agent is dispersed with a particle diameter of preferably 3  $\mu\text{m}$  or less and more preferably in a range from 0.1 to 2  $\mu\text{m}$ ” ([0060]). Matsuoka et al’s measuring method differs from that of the present invention regarding wax diameter. The method of the present invention is determined by observation of the cross section of the toner, as recited in Claim 27; on the other hand, Matsuoka et al’s method is as disclosed in ([0054]) therein. Despite differences in measuring method, the

range of 0.1 to 2  $\mu\text{m}$  of Matsuoka et al is much wider than the 0.06  $\mu\text{m}$  maximum recited in Claim 27.

iii) The Examiner refers to page 49, lines 4-11 of the specification. However, immediately thereafter, Applicants describe that where a particulate wax is co-agglomerated with primary polymer particles, the distribution of the number-average particle diameter of the particle wax becomes wider.

See also Reference Synthesis Example, beginning at page 125, line 2, of the specification. In the Reference Synthesis Example and Fig. 8, the number-average particle diameter of particulate wax observed was 201 nm, which was relatively small compared to average particle diameter of the same in the wax dispersion 15, and a half value width of the number-average particulate diameter in the toner was 100 nm, or 0.1  $\mu\text{m}$ .

With such a small half value width of a number average particle diameter of particulate wax, as recited in Claim 27, the toner of the present invention has excellent releasability, excellent blocking resistance and the apparatus is hardly polluted, as described at page 50, lines 15 to 22, of the specification.

For all the above reasons, it is respectfully requested that the rejections over Matsuoka et al alone, or combined with other prior art be withdrawn.

The rejections of Claims 27-29, 32, 34 and 40 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. 6,177,232 B1 (Hashimoto et al); and under 35 U.S.C. § 103(a), of Claims 37 and 38 as unpatentable over Hashimoto et al in view of Shimazaki, and of Claim 44 over Hashimoto et al combined with U.S. 6,077,635 (Okado et al), are respectfully traversed.

Hashimoto et al disclose a toner particle, represented by Fig. 7A therein, each toner particle containing a binder resin, a colorant and a wax wherein each particle has a

microtexture as to provide a cross-section as observed through a transmission electron microscope (TEM) exhibiting a matrix of the binder resin, a particle of the wax enclosed with the matrix, and a resin dispersed in a particulate form in the wax particle (column 6, lines 6-14), wherein the cross-section is of a sea-island-sea texture wherein a wax particle 72 is enclosed within the matrix of the binder resin 71, and further some particles 71 of binder resin and some colorant particles 73 are enclosed within the wax particle 72 (column 29, lines 9-15).

The Examiner finds that the toner particles of Hashimoto et al inherently meet the terms of at least present Claim 27.

Shimazaki has been discussed above, Okado et al is relied on for their disclosure of circularity of toner particles.

As discussed above, Claim 27 is characterized by relatively small half value width of a number-average particle diameter of particulate wax. On the other hand, the toner disclosed in Hashimoto et al has only one wax particle 72 in each toner particle, as conceded by the Examiner at page 13, lines 16 and 17, of the Office Action. Since in order to have a diameter distribution, there must be plural particles, the toner in Hashimoto et al necessarily cannot have a half value width of a number-average particle diameter of particulate wax.

For all the above reasons, it is respectfully requested that the rejections over Hashimoto et al alone, and in combination with other prior art, be withdrawn.

The rejection of Claim 28 under 35 U.S.C. § 112, second paragraph, in paragraph 7 of the Office Action, is respectfully traversed. Indeed, the rejection is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that it be withdrawn.

The objection to Claims 27 and 28, at paragraph 8 of the Office Action, is respectfully traversed as moot, in view of the above-discussed amendment. Accordingly, it is respectfully requested that it be withdrawn.

The objection to the specification at page 5 is respectfully traversed as moot, in view of the above-discussed amendment. Accordingly, it is respectfully requested that it be withdrawn.

The objection to the disclosure with regard to the use of trademarks, at paragraph 4 of the Office Action, is respectfully traversed. There is no requirement that trademarks **must** be capitalized, nor is there any evidence herein that, to the extent any trademarks described in the specification are proprietary, this proprietary nature is not respected. Indeed, Applicants describe the source of trademarked products. See, for example, the specification at page 58, line 24. Accordingly, it is respectfully requested that this objection be withdrawn.

The objection to the drawings at paragraph 3 of the Office Action is respectfully traversed. Reference items 1 through 7 in Figs. 1-5 are described in the specification at page 6, lines 15-23. Accordingly, it is respectfully requested that the objection be withdrawn.

Applicants note the Examiner's crossing-out of Japanese Patent No. 10-26842 (JP '842), listed on the Form PTO 1449 filed with the IDS on December 18, 2000. In reply, Applicants' copy of the page containing the English abstract of JP 10301332A includes, at the bottom thereof, an English abstract of JP '842. It is also indicated therein that U.S. 5,849,456, which is already of record herein, is of the same patent family of JP '842. Thus, it was improper for the Examiner to cross-out this reference. Nevertheless, in view of the U.S. equivalent of record, it is moot.

With regard to copending U.S. Application 09/736,150, **submitted herewith** is a copy of the claims and abstract thereof.

All of the presently-pending and active claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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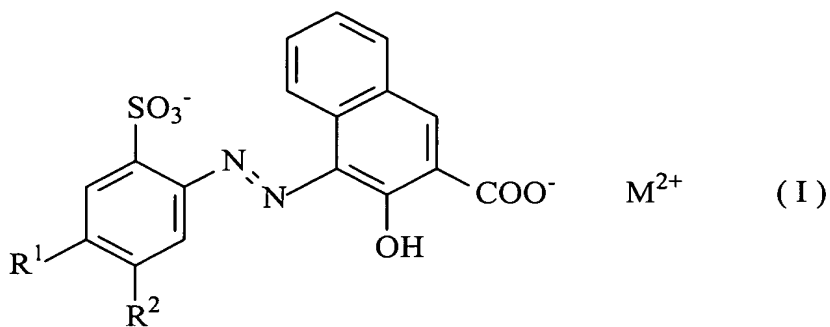
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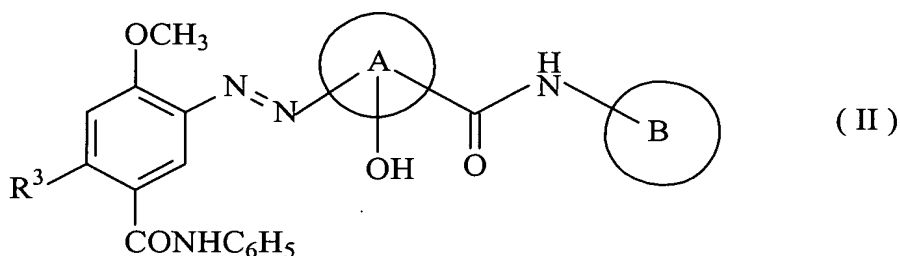
IN THE SPECIFICATION

Please replace the paragraph beginning at page 24, line 18, as follows:

--In one embodiment, a magenta colorant compound represented by the following formulae (I) or (II) is used in a toner of the present invention having a particulate resin coating. Namely a colorant compound represented by the formula (I) can desirably prepare a primary colorant particle dispersion and, therefore, the resulting toner can have a desirable hue. Since a compound represented by the formula (II) is likely to be positively charged, in the case where it is used for a negatively charged toner, the agglomerate of particles containing the colorant (toner core material) is coated with particulate resin so that the colorant is not exposed. Thus, the toner can be negatively charged. When a compound represented by the formula (I) or (II) is included in a toner obtained by an emulsion polymerization agglomeration method, a desirable magenta hue can be obtained. Thus, the compound represented by the formula (I) or (II) can be especially advantageous as the colorant of the toner of the present invention.



wherein  $R^1$  and  $R^2$  each independently represents a hydrogen atom, an alkyl group preferably having 1 to [ ] 8 [ ] carbons or a halogen atom, provided that at least one of  $R^1$  and  $R^2$  is a halogen atom, and M represents Ba, Sr, Mn, Ca or Mg.



wherein A and B each, independently, represent an aromatic ring which can be substituted, and  $R^3$  represents a hydrogen atom, a halogen atom, a nitro group, a cyano group, a hydrocarbon group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aminosulfonyl group wherein the nitrogen atom may be substituted or an aminocarbonyl group wherein the nitrogen atom may be substituted.--

Please replace the heading at page 106, lines 5-7, as follows:

--COMPARATIVE EXAMPLE 12 (Example wherein particulate [wax] resin comprising wax encapsulated therein is coated over the outermost layer)--



# IN THE CLAIMS

--27. (Amended) A toner comprising:

a binder resin and a particulate wax, wherein the toner has a volume-average particle diameter of from 3 to 12  $\mu\text{m}$ , and a half value width of a number-average particle diameter of particulate wax contained therein, when a cross section of the toner is observed, of 0.06  $\mu\text{m}$  or less, and wherein a distribution of particulate wax having an average particle diameter of 0.01  $\mu\text{m}$  or more throughout the toner [particle] satisfies the following equation:

$$(A/B)/(C/D) \leq 0.1$$

wherein A is total area of particulate wax [particles] contained in an outermost layer of the toner [particle] to a depth of 0.1  $\mu\text{m}$ ;

B is total area of said outermost layer of the toner [particle];

C is total area of particulate wax [particles] contained in a remainder of the toner (at a depth of greater than 0.1  $\mu\text{m}$  from the surface of the toner [particle]); and

D is total area of said remainder of the toner [particle],

wherein all areas are measured as observed in a cross section of said toner through a center point of said toner.

28. (Amended) The toner as claimed in claim 27, wherein at a depth of 0.1-1  $\mu\text{m}$  from the surface of the toner, [a] the particulate wax having a particle diameter of 0.01  $\mu\text{m}$  or more is present.--